# June 2010 Newsletter from Building Diagnostics

Welcome to the June newsletter. Late again. The worst part is that I had this essentially completed several days ago and got side tracked by work of all things.

Speaking of side tracked; in addition to this newsletter I am starting a <u>blog</u>. Nothing like being late to the party, but there are a couple of things that intrigued me enough to consider it.

First, I think a blog can be a good way to deal with some of the spur of the moment thoughts that are important, but that I don't get into the newsletter. Second, it should be interactive and everyone can share their ideas with everyone else. Rather than a two way discussion the opportunity is there to add your comments for everyone to respond to. Think of it as a coffee shop/bistro/pub where you supply the beverages.

Just be warned, the barkeep doesn't tolerate bar fights.

## This Month's Topics: Statistics are so hot!

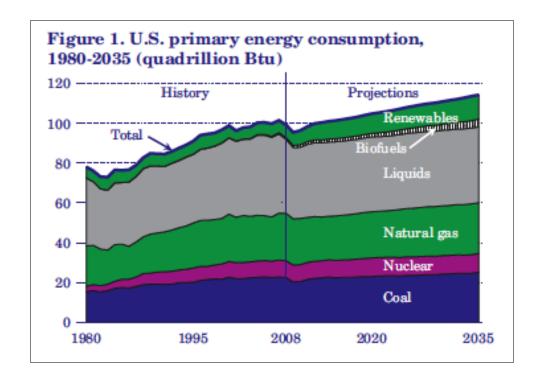
In April the U.S. Energy Information Administration released the *Annual Energy Outlook 2010.* It is available at the following url, <a href="www.eia.doe.gov/oiaf/aeo">www.eia.doe.gov/oiaf/aeo</a>. I love the look of government url's, and most of them can be sung to the Mickey Mouse Club theme song.

I admit that this is not the type of reading that most people seek out for the summer months, but as a source of raw information (and speculation) about energy use this website is hard to beat. Check out the page of New Hampshire data and be proud. We are 47<sup>th</sup> in per capita energy consumption in the U.S.

But back to the AEO 2010. The rest of the document title is With Projections to 2035, which tells the real story, this is a document of assumptions. In the course of 231 pages (in PDF form) possibilities and various assumptions are explored and distilled into charts and tables enough to keep even the geekiest of us happy for hours.

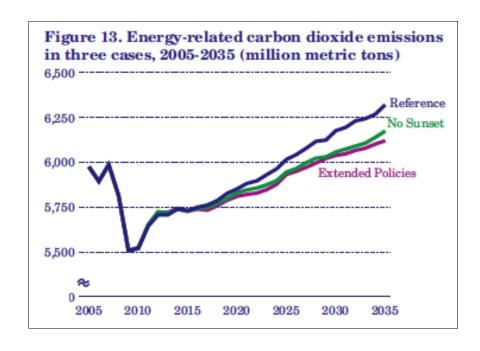
Of course, for many of us our job is to prevent these projections from coming true. Let's start

with this chart from the executive summary. (document page 2, PDF page 11)



This shows an assumed 14% increase in total energy use from 2008, the reports base year, to 2035. That's good in one way, because it is only one fifth the increase that is projected in total economic activity. The difference is attributed to increase energy efficiency efforts.

Unfortunately this still doesn't get to the issue of reducing green house gas emissions. Take a look at this chart from page 26 (PDF 35).



(Note: the "brief" description of the cases that are used in this study runs to 16 pages in the appendix. The truly committed, or committable, among you will take the time to read and understand them.)

While we have seen a reduction over the past few years, largely due to the recession with help from efficiency and better technologies, we are back on a path to increase overall carbon dioxide emissions. This isn't a future that will satisfy anyone who understands the term "sustainability".

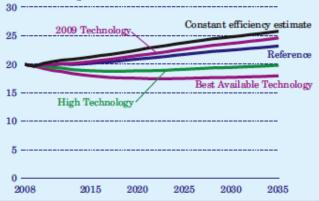
I'm going to include one more section from the report. (page 31, PDF 40)

#### Comparing efficiency projections

Realized improvements in energy efficiency generally rely on a combination of technology and economics [47]. The figure below illustrates the role of technology assumptions in the AEO2010 projections for energy efficiency in the residential and commercial buildings sector. Projected energy consumption in the Reference case is compared with projections in the Best Available Technology, High Technology, and 2009 Technology cases and an estimate based on an assumption of no change in efficiency for building shells and equipment (the cases are defined in Appendix E).

With the exception of the constant efficiency estimate, the rate at which existing equipment stocks

Delivered energy consumption in the residential and commercial buildings sector in five scenarios, 2008-2035 (quadrillion Btu)



are replaced in each of the cases is governed by the rate of stock turnover. The constant efficiency estimate assumes no stock turnover and no change in efficiency from the 2009 existing stock. The 2009 Technology case assumes a normal rate of stock turnover, but limits new equipment choices to what is available in 2009. Comparing the two projections, energy consumption in 2035 is 1.2 quadrillion Btu lower in the 2009 Technology case. The difference—about 4.5 percent—shows the effect of stock turnover even absent any technology improvements.

In the Best Available Technology case, with new construction materials and replacement equipment limited to the most energy-efficient available, energy consumption in the buildings sector in 2035 is 8.6 percent lower than the 2009 level and 23 percent lower than in the Reference case, even though total floorspace grows by more than 50 percent. Even in 2035, however, not every piece of equipment or every building shell reaches the maximum efficiency that could be achieved as a result of technology improvements, because some long-lived equipment and building shells installed before 2009 still have not been replaced at that point. Surpassing the efficiency levels projected in the Best Available Technology case would require policies designed to increase the rate of stock turnover—for example, by incentivizing or mandating retrofits of existing buildings and replacement of equipment with the most efficient models available.

If you read through to the lower right corner you'll see that we could do better, if we decide that it is a priority.

This report makes many references to various forms of geo-political uncertainties, and if the authors are uncertain I am more so. But the one thing I know that takes the sting out of

uncertainty is to be prepared for the worst case. Then any surprises are for the better.

So, if we make the assumption that energy is going to cost more and be in short supply how do we prepare? Let's try to reduce our consumption, via deep energy retrofits, to a point where we can be reasonably certain that we can meet the demand under the worst conditions. The worst that could happen in that case is that we get by without any major disruptions to our lifestyle. If things go better, we will still reap the benefits of a more stable energy supply and perhaps lower prices. We can also congratulate ourselves for reducing our carbon footprint.

Oh, we will also have a stock of buildings that are comfortable to inhabit, are durable and that can be operated at a low cost. Is this a bad business model?

I propose that we archive a copy of the **Annual Energy Outlook 2010 With Projections to 2035** for the future, and maybe in 2035 someone will read it and wonder at the pessimism of it all.

I have a correction to last month's bit on HB 1554. There was a provision added that allows some funding to go towards larger commercial projects. I will sort out the details and post them to my blog (he said, driving traffic). It sounds like a satisfactory compromise, but I haven't sat down and digested the actual wording.

Actually, I know some of you follow these things on a regular basis, let's hear from you.

### **Energy tips:**

A couple of months ago I included a bit of shameless pandering to you, oh newsletter readers. Now I am turning things around, I'm resorting to shaming. I have concluded that none of you explain anything to your customers and clients. Tsk Tsk!

I will give you the benefit of the doubt and assume that nobody actually read last months newsletter. And who could blame you? So let's try this again, Your best, or worst if you want to turn in that direction, explanation of building geekery to the general public. Next month I'll include my response to people who tell me buildings need to breathe. Don't worry, I've mellowed slightly, I don't use the graphic and slightly unseemly metaphors I used to.

#### **Blatantly Commercial Content:**

I do have to justify the time spent on this effort, so I am charging myself an exorbitant fee to sponsor this newsletter. I get one ad per newsletter and free coffee refills in the kitchen.

Business update: I continue to do a mix of residential and commercial energy consulting work; I'm looking for more of both. Please visit my website, <a href="http://www.buildingdiagnosticsnh.com/">http://www.buildingdiagnosticsnh.com/</a> for information on my capabilities and background.

I haven't had an interesting "sick" building for a while. I'm afraid my diagnostic skills will get rusty. If you know a building that has people scratching their heads give me a call.

#### **Closing thoughts:**

As mentioned above, I need feedback for this little venture to succeed. I would like to include notices for events that relate to energy, the environment and community building, so if you have any announcements please send them in to <a href="mailto:newsletters@buildingdiagnosticsnh.com">newsletters@buildingdiagnosticsnh.com</a>. I also welcome rebuttals and amplifications for anything I write.

Please forward this to anyone who you think would like it, if you don't like it use the email address above to unsubscribe.

Thank you, I'll see you next month.